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BUREAU OF MINES MINERALS YEARBOOK

The Mineral Industry of Louisiana

UNITED STATES DEPARTMENT OF THE INTERIOR

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UNITED STATES DEPARTMENT OF THE INTERIOR • Manuel J. Lujan, Jr., Secretary

BUREAU OF MINES • T S Ary, Director

This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

The Mineral Industry of Louisiana

This chapter has been prepared under a Memorandum of Understanding between the Bureau of Mines, U.S. Department of the Interior, and the Louisiana Geological Survey for collecting information on all nonfuel minerals.

By James R. Boyle[1] and Charles G. Groat[2]

The value of Louisiana's nonfuel mineral production in 1987 was $424.2 million, a decrease of $22.6 million, the second straight year of declining values. The State continued to lead the Nation in production of salt and shell, was second in Frasch sulfur and fifth in sulfur recovered from oil refineries. Salt and Frasch sulfur remained the predominant nonfuel mineral commodities produced in Louisiana.

Table 1.—Nonfuel mineral production in Louisiana[1]

Mineral	1985		1986		1987	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays thousand short tons	334	$7,017	332	$7,670	357	$9,192
Gem stones	NA	*1	NA	1	NA	1
Salt thousand short tons	12,271	137,273	11,609	103,611	12,498	108,999
Sand and gravel:						
Construction do.	*15,000	*48,000	14,292	46,134	*12,200	*43,600
Industrial do.	267	3,828	256	4,225	289	3,997
Stone (crushed)[2] do.	4,820	25,956	*5,400	*25,300	4,090	30,514
Sulfur (Frasch) thousand metric tons	1,698	W	1,602	W	1,458	W
Combined value of cement (masonry (1985, 1987), and portland), gypsum (1985, 1987), lime, stone (crushed miscellaneous), and values indicated by symbol W	XX	298,501	XX	259,857	XX	221,918
Total	XX	520,586	XX	446,798	XX	424,221

*Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" figure. XX Not applicable.

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[2]Excludes certain stones; kind and value included with "Combined value" data.

Table 2.—Nonfuel minerals produced in Louisiana in 1986, by parish[1]

Parish	Minerals produced in order of value
Allen	Sand and gravel.
Ascension	Salt.
Assumption	Do.
Beauregard	Sand and gravel.
Bienville	Clays.
Caddo	Do.
Calcasieu	Salt.
Cameron	Do.
Catahoula	Sand and gravel.
East Baton Rouge	Do.
East Feliciana	Do.
Iberia	Salt.
Jefferson	Sulfur, salt.
Jefferson Davis	Sand and gravel.
Lafayette	Do.
Lafourche	Salt.
LaSalle	Sand and gravel.
Livingston	Do.
Morehouse	Do.
Natchitoches	Clays.
Orleans	Cement.
Ouachita	Sand and gravel.
Plaquemines	Sulfur, salt.
Pointe Coupee	Clays.
Rapides	Sand and gravel.
Red River	Do.
St. Bernard	Do.
St. Helena	Do.
St. Martin	Salt, sand and gravel.
St. Mary	Salt.
St. Tammany	Sand and gravel, clays.
Tangipahoa	Sand and gravel.
Union	Do.
Vermilion	Do.
Vernon	Do.
Washington	Do.
Webster	Do.
West Feliciana	Do.
Undistributed[2]	Stone (crushed), lime, gem stones.

[1]No production of nonfuel mineral commodities was reported for parishes not listed.
[2]Data not available by parish for minerals listed.

Trends and Developments.—The Louisiana economy, stagnant since 1982, improved while the unemployment rate dropped from nearly 15% in January to slightly less than 10% in December. However, nearly all mineral-related sectors decreased in employment: Mining dropped nearly 10%; construction, 8%; and stone, clay, and glass dropped more than 5%.

Mineral-related industries producing anhydrous ammonia, chlorine, liquid hydrogen, and sulfuric acid expanded facilities at a cost of $24 million. One new facility under construction, a calcium chloride plant at Norco valued at $10 million, was scheduled for completion in 1988.

Severance tax receipts for 1987, as reported by the Louisiana Department of Revenue, totaled slightly over $3.0 million, down from $3.4 million in 1986. Minerals taxed included brine ($54,000), gravel ($406,000), salt ($275,000), sand ($623,000), shell ($254,000), stone ($6,000), and sulfur ($1.4 million). Only brine and sand had increased values; the remaining commodities had decreased values from those of 1986.

Minerals were the basic cargo handled at the port at Burnside. The facility handled 3.6 million short tons of material in 1987, up slightly from 3.5 million tons in 1986. Minerals handled included alumina, bauxite, cement, chrome, coal, coke, ferroalloys, fluorspar, iron ore, manganese ore, pig iron, rutile, vermiculite, and zircon. Major minerals shipped through the port at Lake Charles included barite, cement, and crushed stone.

Freeport-McMoRan Inc. purchased Agrico Chemicals Co. for $250 million; the purchase included Agrico's fertilizer facilities at Donaldsonville, LA. Freeport constructed a $3 million pilot plant, at its Convent facility, to convert phosphogypsum, a waste product, into sulfuric acid and synthetic aggregate. The pilot plant was expected to be operational in 1988.

Legislation and Government Programs.—A joint Federal-State $45 million project to deepen the Mississippi River from 40 to 45 feet was begun in July. The first phase will deepen the channel from New Orleans to Donaldsonville and will take a year and a half. The second phase will deepen the river to Baton Rouge. Deepening of the channel will allow greater tonnages of mineral raw materials to be imported through the use of larger ships.

The Mineral Resources Institute of the Louisiana State University received a grant from the U.S. Bureau of Mines under title III of Public Law 95-87. The law was designed to encourage the training of mining engineers and other scientists involved in mineral-related studies.

REVIEW BY NONFUEL MINERAL COMMODITIES

INDUSTRIAL MINERALS

Cement.—Output of portland cement increased while construction activities decreased. A relatively small amount of masonry cement was produced after no output in 1986. Lone Star Industries Inc., the only cement producer in Louisiana, installed a high-capacity conveyor system capable of unloading 600,000 short tons per year at its New Orleans terminal. Major uses for portland cement were ready-mixed concrete, concrete products, building materials, and highway construction. Imports of cement and clinker amounted to 1,600,000 short tons.

Clays.—Common clay was the only clay produced in Louisiana and was mined by five companies at seven mines in five parishes. Output increased slightly, and unit prices increased from $23.10 per short ton in 1986 to $25.75 per ton in 1987. Major use was in the manufacture of lightweight aggregates for use in concrete block and structural concrete. With demand tied closely to construction activities, output remained at a relatively low level. CRH PLC of Dublin, Ireland, purchased Big River Industries Inc. for $22 million. Big River was a major producer of lightweight aggregate with manufacturing plants in Alabama, Georgia, and Louisiana. The Baton Rouge facility marketed its products in a 10-State area in the Southeast and barged material to Minnesota and Illinois.

Lime.—Output of lime remained relatively low while production decreased slightly for hydrated lime, but increased for quicklime; total output increased. USG Corp. produced both quicklime and hydrated lime from shells at its facility in New Orleans; Dravo Lime Co. also produced both quicklime and hydrated lime at its plant in Amelia. Output was used in water purification and softening, road stabilization, and petrochemicals.

Salt.—Louisiana continued as the leading salt producer in the Nation with approximately one-third of the Nation's output. Production increased 7.7%, while unit value decreased 2.4%. Ten companies recovered salt at 11 operations in 9 parishes. Three operations were underground mines, and the remaining ones were solution mines.

Markets for salt remained stable at two companies in the State, PPG Industries Inc. and The Dow Chemical Co. Both expanded their chlorine facilities. Chlorine and caustic soda were the largest domestic markets for salt, using about one-half of the Nation's output.

Sand and Gravel.—Louisiana produced both construction and industrial sand and gravel in 1987; total output decreased.

Construction.—Construction sand and gravel production is surveyed by the U.S. Bureau of Mines for even-numbered years only; this chapter contains estimates for 1985 and 1987 and actual data for 1986. Data for odd-numbered years are based on annual company estimates. Estimates of output of construction sand and gravel show a decrease from that of 1986. The output was tied to the relatively depressed economic conditions in the State and decreased construction activities. Most operations maintained output at less than capacity, depending on proximity to and type of construction activities. Ideal Basic Industries acquired Braswell Sand and Gravel Co. Inc. of Shreveport and its tow subsidiaries, which served the ready-mix, aggregate, concrete pipe, and concrete block markets in the area.

Industrial.—Three companies produced industrial sand from four parishes with more output than in 1986; unit values, however, decreased. Markets in the foundry industry remained firm, while those in the glass industry were weak.

Stone (Crushed).—Stone production is surveyed by the U.S. Bureau of Mines for odd-numbered years only; this chapter contains actual data for 1985 and 1987 and estimates for 1986. Data for even-numbered years are based on annual company estimates. Reported production of crushed stone in 1987 decreased from that estimated for 1986; unit prices increased. Shell accounted for over 90% of the State's total crushed stone output; Louisiana remained the leading producer of shell nationally. Three companies produced shell in Orleans and St. Mary Parishes at five operations. Anhydrite was mined at one quarry in Winn Parish. Crushed stone was used primarily for coarse and fine aggregates, cement, and lime manufacture; anhydrite was used mainly as a road base.

Environmental attacks on the shell industry continued while the U.S. Corps of Engineers completed its environmental impact statement on the effects of shell dredging. At yearend, the State renewed dredging

leases, although the corps had not decided to allow continued dredging of shells. In a suit filed by the Sierra Club, a New Orleans district court declared that the State's leases with shell dredging companies were invalid because bid laws were not followed; the action was appealed to the circuit court of appeals with no decision by yearend. To fill the possible void if shell dredging were stopped, several companies were developing options to supply the Louisiana market. Vulcan Materials formed a joint venture with Mexico's Grupo ICA to quarry stone in the Yucatan Peninsula to ship to gulf coast markets; two of the major markets are Lake Charles and New Orleans.

Ideal Basic Industries Inc. and Dravo Basic Materials Co. were also studying the feasibility of importing crushed stone from Mexico and the Dominican Republic into Louisiana markets. Dravo, in an agreement with Cyprus Minerals Co., acquired Three Rivers Rock Co. and Louisiana Limestone Aggregates Inc. Three Rivers has a 4- to 5-million-short-ton-per-year quarry in Kentucky, while Louisiana Limestone has distribution yards in Baton Rouge, Houma, Knotz Springs, Lake Charles, and Morgan City.

Table 3.—Louisiana: Crushed stone[1] sold or used by producers in 1987, by use

(Thousand short tons and thousand dollars)

Use	Quantity	Value
Coarse aggregate (+ 1-1/2 inch): Riprap and jetty stone	14	91
Coarse aggregate: Graded road base or subbase	542	7,012
Special: Other unspecified[2]	3,834	29,406
Total	4,390	36,514

[1]Includes shell and sandstone; miscellaneous stone withheld to avoid disclosing company proprietary data.
[2]Includes unpaved road surfacing; production reported without a breakdown by end use; and estimates for nonrespondents.

Sulfur.—Louisiana ranked second nationally in output of Frasch sulfur and fifth in recovered elemental sulfur. Sulfur shipments decreased for the third straight year, but, in terms of value, remained the State's leading nonfuel mineral. Output remained at a relatively low level because of the weak demand for phosphate fertilizers. Freeport Minerals Co. operated its Garden Island Bay facilities at the mouth of the Mississippi and its Grand Isle Mine 6 miles offshore; its Caminada Pass Mine, another offshore mine, was scheduled to produce sulfur in early 1989. Freeport utilizes about 80% of its output at its fertilizer plants in Convent and Donaldsonville; most of the remainder was used by the fertilizer industry at Tampa, FL.

The U.S. Department of the Interior planned a sulfur lease sale on tracts in the central and western regions of the Outer Continental Shelf in the Gulf of Mexico early in 1988.

Nine oil companies recovered elemental sulfur from nine refineries in seven parishes. Output was 536,000 metric tons valued at $51.1 million, compared with 527,000 tons valued at $57.4 million in 1986.

Table 1.—Louisiana: Sulfur produced and shipped from Frasch mines

(Thousand metric tons and thousand dollars)

Year	Production	Shipments	
		Quantity	Value
1983	1,286	1,643	W
1984	1,937	2,007	W
1985	2,071	1,606	W
1986	1,579	1,602	W
1987	1,369	1,458	W

W Withheld to avoid disclosing company proprietary data.

Other Industrial Minerals.—Imported and domestic barite was crushed and ground at eight plants in Louisiana for use in oil and gas drilling; output increased over that of 1986. Slightly more than 200,000 short tons of barite was imported through the port at Lake Charles, most of which was from China. Allied Signal Corp. and Texas United Chemical Corp. produced synthetic calcium chloride using hydrochloric acid and limestone at plants in Baton Rouge and Lake Charles; production and value increased. Synthetic calcium chloride was used in concrete setup, dust control, oil and gas drilling, road deicing, and other uses. TETRA Resources Inc. started construction of a $10 million calcium chloride pellet facility. The plant at Norco was expected to be in operation by mid-1988. Louisiana was one of two States with reported production of synthetic calcium chloride. Agrico Chemical Co. at Donaldsville and Freeport Chemical Co. at Uncle Sam operated fluosilicic acid facilities during the year. Freeport-McMoRan purchased Agrico's facility during the year. National Gypsum Co. in Jefferson Parish and USG Corp. in Orleans Parish produced calcined gypsum from crude material shipped into the State. Calcined gypsum output and value increased over that of 1986. Total annual capacity for anhydrous ammonia was more than 7 million short tons or more than 40% of national capacity. Of the 43 domestic producers of anhydrous ammonia, 14 had facilities in Louisiana. American Cyanamid Co., Westwego, expanded facilities at a cost of more than $6 million; completion was expected by mid-1988. Crude perlite was expanded by Filter-Media Co. Inc. of Louisiana at its facilities in Reserve, St. John the Baptist Parish, from material shipped into the State. Output of expanded perlite increased while unit values increased. The perlite was used as a filter aid, for insulation, and in concrete aggregate. Vermiculite was exfoliated by W. R. Grace & Co. at its plant in New Orleans. Principal end uses were in concrete and plaster aggregate, horticulture, loose fill insulation, and block insulation.

METALS

Aluminum.—Louisiana remained 1 of 17 States capable of producing aluminum; the State's facilities have been idle since 1983. In 1987, Kaiser Aluminum & Chemical Corp. wrote off the remaining 105,000 metric tons per year of capacity at its closed Chalmette smelter.

Ormet Corp.'s alumina refinery at Burnside remained closed for the second straight year. Ohio River Associates, the owner of Ormet, stated that, if certain employee concessions were made, the plant would reopen.

Iron and Steel.—Bayou Steel Corp. operated the only minimill in Louisiana at LaPlace. The minimill had a capacity of 700,000 short tons with a rolling capacity of 400,000 tons. Because of inexpensive barge transportation costs, Bayou's market area extended to Chicago, IL, and Pittsburgh, PA.

Nickel.—AMAX Inc. operated its metal recovery facility at Braithwaite. After an 8-week work stoppage, the refinery resumed operations late in the year. Annual rated capacity was 3 million pounds of molybdenum, 4 million pounds of vanadium pentoxide, 40 million pounds of nickel cobalt residues, and 24 million pounds of aluminum trihydrite.

[1]State Mineral Officer, Bureau of Mines, Tuscaloosa, AL.

[2]State geologist, Louisiana Geological Survey, Baton Rouge, LA.

Table 5.—Principal producers

Commodity and company	Address	Type of activity	Parish
Aluminum:			
Kaiser Aluminum & Chemical Corp	Box 1690 Chalmette, LA 70043	Plant	St. Bernard
Cement:			
Lone Star Industries Inc	515 W. Greens Rd. Houston, TX 77067	do.	Orleans.
Clays:			
Athens Brick Co. Inc	Box 70 Athens, TX 75751	Mines and plant	Caddo.
Big River Industries Inc	Box 66277 Baton Rouge, LA 70806	Mine and plant	Pointe Coupee.
Gypsum:			
National Gypsum Co	Box 128 Westwego, LA 70094	Plant	Jefferson.
USG Corp	101 South Wacker Dr. Chicago, IL 60606	do.	Orleans.
Lime:			
Dravo Lime Co	One Gateway Center 7th Floor Pittsburgh, PA 15222	do.	St. Mary.
USG Corp	101 South Wacker Dr. Chicago, IL 60606	do.	Orleans.
Salt:			
Domtar Chemicals Inc., Shifto Salt Div	4825 North Scott Shiller Park, IL 60176	Underground mine	St. Mary.
The Dow Chemical Co	Midland, MI 48640	Brine wells	Iberville.
International Salt Co	Clarks Summit, PA 18411	Underground mine	Iberia.
Morton Salt Co	110 North Wacker Dr. Chicago, IL 60606	do.	Do.
PPG Industries Inc	Box 1000 Lake Charles, LA 70604	Brine wells	Calcasieu.
Sand and gravel:			
Gifford-Hill & Co. Inc	Box 6615 Shreveport, LA 71136	Dredges, pits, plants	Jefferson Davis, Rapides, Tangipahoa, Webster.
Louisiana Sand and Gravel Co	Box 963 Baton Rouge, LA 70821	Dredge and plant	St. Helena.
Standard Gravel Co. Inc.	Route 7, Box 53 Franklinton, LA 70438	Dredges and plants	St. Tammany and Washington.
Texas Industries Inc	Box 5472 Alexandria, LA 71301	Dredges, pits, plants	Beauregard, Grant, La Salle, Ouachita, Rapides, St. Tammany.
Stone (crushed):			
Pontchartrain Dredging Corp	Box 8005 New Orleans, LA 70182	Quarry and plant	Winn.
Southern Industries Corp	Box 2068 Mobile, AL 36652	Dredges	Orleans and St. Mary.
Winn Rock Inc	Box 790 Winnfield, LA 71483	Quarry and plant	Winn.
Sulfur:			
Native:			
Freeport Minerals Co	200 Park Ave. New York, NY 10166	Frasch process	Jefferson and Plaquemines.
Recovered:			
Cities Service Oil Co	Box 300 Tulsa, OK 74102	Refinery	Calcasieu.
Exxon Co. U.S.A.	Box 551 Baton Rouge, LA 70821	Plant	East Baton Rouge.
Vermiculite (exfoliated):			
W. R. Grace & Co	62 Whittemore Ave. Cambridge, MA 02140	do.	Orleans.

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